(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 473 680 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
03.11.2004 Bulletin 2004/45

(51) Int Cl.[7]: **G07F 1/02**, G07F 5/02

(21) Application number: **03425272.6**

(22) Date of filing: **30.04.2003**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR
Designated Extension States:
AL LT LV MK

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(54) Anti-vandalism coin box device

(57) Coin box device (11) for accepting coins (24) or the like for an automatic machine (10) dispensing goods and/or services, comprising: an assembling plate (12) on said machine, having an internal surface (14) and an external surface (13); coin inserting means (20, 21, 22, 23, 25, 26, 30) connected to the assembling plate (12); means (15) for recognising and collecting inserted coins, apt to accept coins by gravity; and means (16, 18, 27, 31, 32) for returning any excess coins, said coin inserting means such as to prevent the access to the coins from the outside.

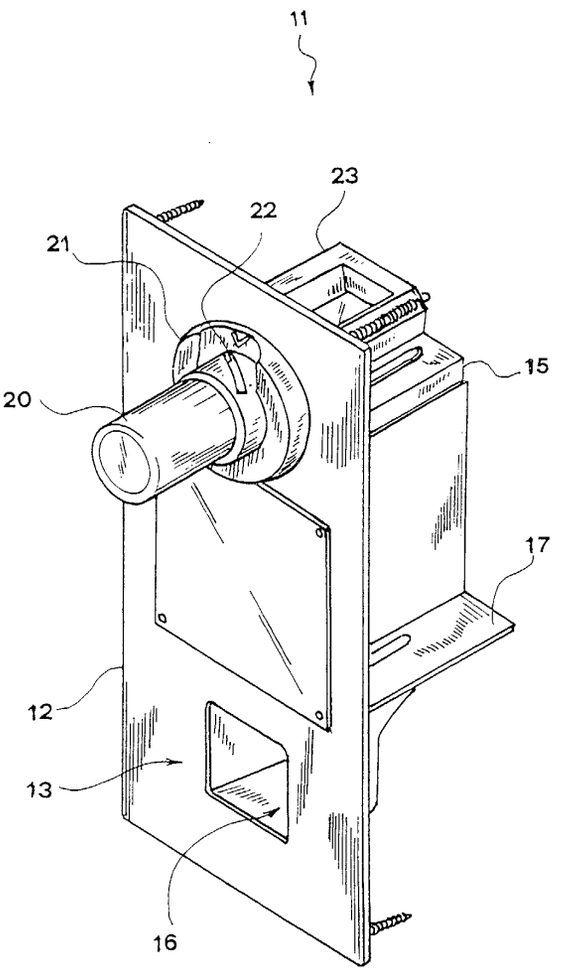

fig 3

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Description

[0001] The present invention refers to an anti-vandalism coin box device, in particular for automatic and/or stand-alone payment machines.

[0002] To date, the systems assembled onto the automatic vending and/or service dispensing machines are made so as to support the body of an electronic coin acceptor. Suchlike acceptors are well known and commercially available (mars, seci, comestero etc.).

[0003] A second function is that of protecting the coin box and the coin acceptor from an outside access.

[0004] Lastly, it enables the insertion of the coins by a customer using a vertical and/or oblique slot, and the collection of any rejected coin or of the change.

[0005] However, the devices presently in use are subjected to vandalism and/or damaging, above all due to coin pilfering attempts.

[0006] Usually, such attempts foresee various actions that may even irreparably damage the device.

[0007] Typical examples are the inletting of liquids of various nature in the slots, damaging the microcircuits of the electronic coin boxes.

[0008] Moreover, ofttimes ill-intentioned subjects block the device so as to anyhow allow the insertion of first coins by customers. These coins, due to the forced obstruction of some parts of the device, remain blocked between the external inlet plate and the coin box, thereby not allowing any dispensing from the system, and being subsequently pilferable.

[0009] A further technique adopted is that of breaking and blocking the coin box from the bottom (through the bottom coin return door), with the immediate result of allowing the broken coin box to accept the inserted coins (with no service provided to the customer) and of preventing the rejected coins from falling in the suitable bottom housing.

[0010] Ill-intentioned subjects, by subsequently removing the obstruction, can recover the collected coins at leisure.

[0011] Apparently, even though just a few coins may be pilfered each time, the recurrence of said actions can cause considerable economic damage, apart of course from the damage physically inflicted to the devices.

[0012] Object of the present invention is to provide a coin box device for accepting coins or the like for an automatic machine dispensing goods and/or services, comprising:

- an assembling plate on said machine, having an internal surface and an external surface;
- coin inserting means, connected to said assembling plate;
- means for recognising and collecting inserted coins, apt to accept coins by gravity; and
- means for returning any excess coins,

characterised in that said coin inserting means is such as to assume a first resting position in which it is not communicating with said means for recognising and collecting coins and a second operating position, in which they are communicating with said means for recognising and collecting coins, said second position being assumable solely following the insertion of a coin. The present invention further refers to an automatic machine providing goods and/or services, characterised in that it comprises a coin box device as defined above.

[0013] The main advantage of a device according to the present invention lies in that, though inletting coins into the internal coin acceptor, it does not allow a simple access from the outside to internal parts of the coin box, defending them from ill-intentioned attacks.

[0014] A second advantage of a device according to the present invention lies in that it comprises a protection system also at the (coin return) bottom zone, preventing any access to the coin box from the bottom.

[0015] Further advantages, features and the operation modes of the present invention will be made apparent in the following detailed description of a preferred embodiment thereof, given by way of example and without limitative purposes, making reference to the figures of the annexed drawings, wherein:

figure 1 sketches a known-art coin box device;
figure 2 is a view of a dispensing machine equipped with a coin box device according to the present invention;
figure 3 is a front perspective view of a coin box device according to the present invention;
figure 4 is a rear perspective view of a coin box device according to the present invention;
figure 5A is a side sectional view taken along line A-A of a coin box device according to the present invention in a resting position;
figure 5B is a side sectional view taken along line A-A of a coin box device according to the present invention in an operating position;
figure 6 is a sectional view taken along line B-B of figure 5B of a coin box device according to the present invention; and
figure 7 is a perspective view of a device according to the present invention in an operating position.

[0016] With initial reference to Figure 1, it schematically shows a known-type coin box device 1 used to date.

[0017] The essential members of such a device are an assembling plate 2, to which there is connected, obviously from the rear (when assembled), a coin box 5, e.g. of electronic type, apt to recognise and to collect inserted coins.

[0018] The coins 4 can be inserted from the outside through a slot 3 obtained onto the plate 2 ending by gravity in the coin box 5.

[0019] Lastly, an opening 6 for returning any unused coins or change is provided.

[0020] As explained hereto, such devices have some weak spots prone to ill-intentioned attacks aimed at breaking them open to pilfer the coins collected therein.

[0021] In particular, the most vulnerable spots are the coin insertion slot, as indicated by arrow F1, or the coin return slot, as indicated by arrow F2.

[0022] Next figure 2 shows an automatic machine dispensing goods and/or services, e.g. a dispensing machine, comprising a coin box device 11 according to the present invention.

[0023] Figure 3 is a front perspective view of the device 11.

[0024] The device 11 comprises a plate 12 for the assembling onto the machine 10, having an internal surface 14 and an external surface 13.

[0025] The device 11 further comprises means 15 for recognising and collecting inserted coins, connected to the assembling plate via supports 17 and apt to accept coins by gravity. Such means comprises, e.g. an electronic coin box. A detailed description of such a coin box and of its operation will be omitted, as those are known-art devices well known to those skilled in the art.

[0026] Moreover, coin inserting means 20, 21, 22, 23, 30, 31 are connected to the assembling plate 12.

[0027] Such coin inserting means comprises a ram 22 having a slit 22 apt to accommodate a coin 24.

[0028] The ram 22 is slidadably mounted on a cylinder 21, 23, in turn connected to an assembling plate 12.

[0029] The ram and the cylinder are preferably made of an aluminium casting or of an aluminium/stainless steel alloy.

[0030] The ram 20 is at least partially hollow, so as to accommodate therein the coin 24 inserted through the slit 22.

[0031] The slit 22 is tilted with respect to the axis of the ram 20, in order to ease the subsequent shifting of the coin during the run of the latter.

[0032] The cylinder 21, 23 is preferably made of aluminium and buried into the assembling plate 12, so as to make the removal from the outside substantially impossible.

[0033] The coin inserting means further comprises a guide 25, 26, apt to keep in axis the ram 20 during its sliding inside of the cylinder 21, means 30 for returning the ram, apt to return the latter to a resting position when not in use, a position illustrated in the next figure 5A. In such a resting position, the ram may accept a coin 24, however there still is no direct communication between the coin inserting means and the underlying coin box.

[0034] The returning means are e.g. a pair of return springs 30, connected between the internal surface 14 of the plate 12 and one end 29 of the ram 20.

[0035] Upon inserting a coin 24 into the slit 22, the user should push the ram 20, as indicated by the arrow F10 of figure 5B.

[0036] Thus, the ram 20 advances to a working position, illustrated in figure 5B, in which there is a communication with the coin box, enabling the coin 24 to fall in the latter.

[0037] Of course, the ram may assume such a position only following the inserting of a coin into the slit.

[0038] In the operating position, the coin 24 may fall from the ram/cylinder group through a bottom opening 28, more evident in the next figure 7, in the room of the coin box 15 that for simplicity's sake is not shown in the figures.

[0039] At the coin fall, and upon relieving the pressure, the cylinder returns to the coin accepting position.

[0040] The device according to the present invention further comprises means 16, 18, 27, 31, 32 for returning unused or excess coins, visible in the sectional view of figure 6.

[0041] In particular, such coin returning means comprises a seat 18 for collecting the returned coins, accessible from the outside of the plate 12 through an opening 16 preferably protected by a mobile door 27.

[0042] Moreover, the excess coin returning means comprises one or more protecting flaps 31, 32, located so as to allow the fall of the coins in the collecting seat, but such as to prevent the access to the coin box through the opening 16.

[0043] Preferably, the device according to the present invention comprises two protecting flaps 31, 32, tilted the one with respect to the other and at least partially overlapped.

[0044] The present invention has hereto been described according to a preferred embodiment thereof, given by way of example and without limitative purposes.

[0045] It is understood that other embodiments may exist, all to be construed as falling within the protective scope of the same invention, as defined by the annexed claims.

Claims

1. A coin box device (11) for accepting coins (24) or the like for an automatic machine (10) dispensing goods and/or services, comprising:

- an assembling plate (12) on said machine, having an internal surface (14) and an external surface (13);
- coin inserting means (20, 21, 22, 23, 25, 26, 30), connected to said assembling plate (12);
- means (15) for recognising and collecting inserted coins, apt to accept coins by gravity; and
- means (16, 18, 27, 31, 32) for returning any excess coins,

characterised in that said coin inserting means is such as to assume a first resting position in which it is not communicating with said means for recognising and collecting coins and a second operating position, in which they are communicating with said

means for recognising and collecting coins, said second position being assumable solely following the insertion of a coin.

2. The device according to claim 1, wherein said means for recognising and collecting coins is an electronic-type coin box (15).

3. The device according to claim 2, wherein said coin box (15) is of the mars type, or of the seci type, or of the comestero type.

4. The device according to any one of the claims 1 to 3, wherein said coin inserting means (20, 21, 22, 23, 25, 26, 30) comprises a ram (20) having a slit (22) apt to accommodate a coin (24).

5. The device according to claim 4, wherein said ram (20) is slidadably mounted on a cylinder (21, 23).

6. The device according to claim 5, wherein said cylinder (21, 23) is connected to said assembling plate (12).

7. The device according to any one of the claims 4 to 6, wherein said coin inserting means (20, 21, 22, 23, 25, 26, 30) comprises a guide (25, 26), apt to keep in axis said ram (20) during its sliding.

8. The device according to any one of the claims 4 to 7, wherein said coin inserting means (20, 21, 22, 23, 25, 26, 30) comprises means (30) for returning said ram (20).

9. The device according to claim 8, wherein said returning means comprises one or more return springs (30), connected between the internal surface (14) of the plate (12) and one end (29) of said ram (20).

10. The device according to any one of the claims 1 to 9, wherein said means (16, 18, 27, 31, 32) for returning excess coins comprises a seat (18) for collecting the returned coins, accessible from the outside (13) of said plate (12) through an opening (16).

11. The device according to claim 10, wherein said opening (16) is protected by a mobile door (27).

12. The device according to claim 10 or 11, wherein means (16, 18, 27, 31, 32) for returning excess coins comprises one or more protecting flaps (31, 32), located so as to allow the fall of the coins in said collecting seat (18) and apt to prevent the access to said means for recognising and collecting coins (15) through said opening (16).

13. The device according to claim 12, wherein means for returning excess coins comprises two protecting flaps (31, 32) tilted the one with respect to the other and at least partially overlapped.

14. An automatic machine (10) dispensing goods and/or services (10), **characterised in that** it comprises a coin box device (11) according to any one of the claims 1 to 13.

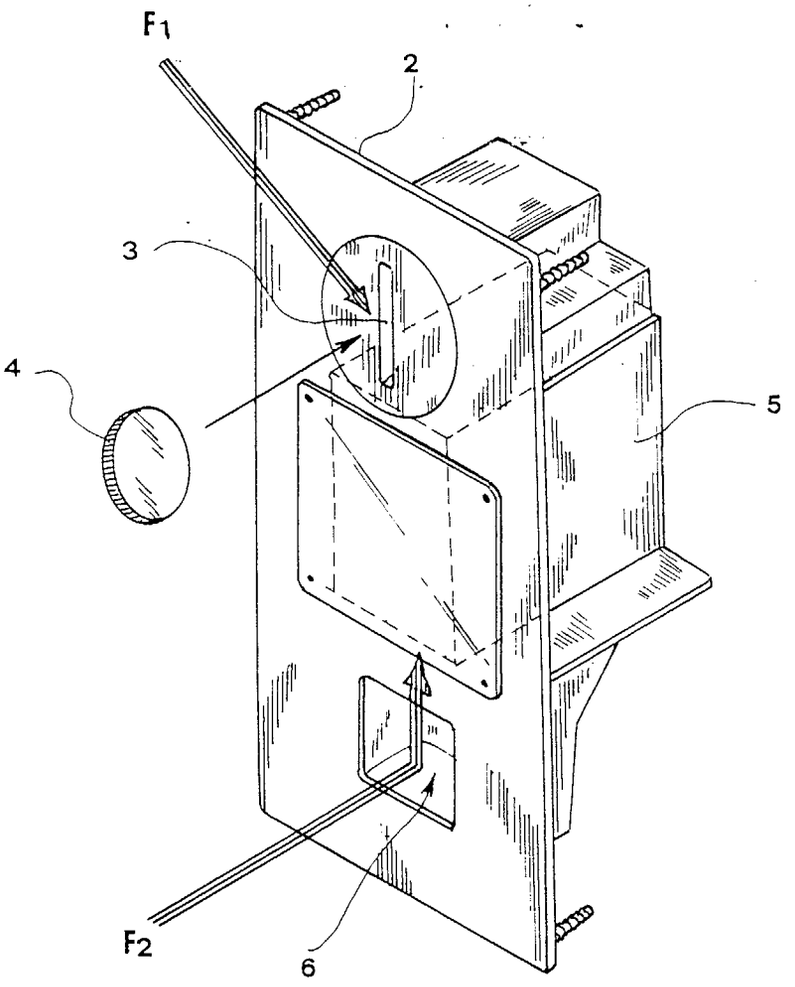

fig.1

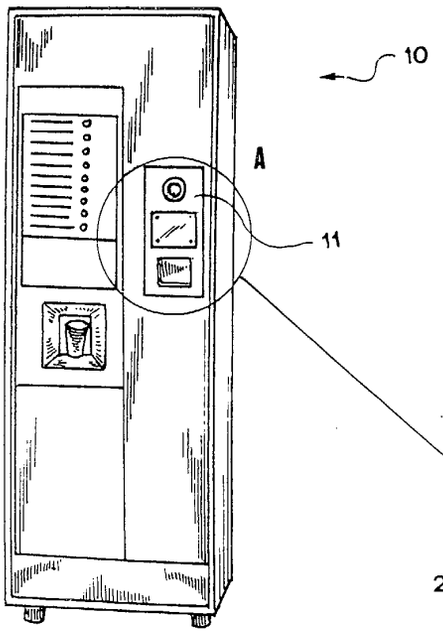

fig.2

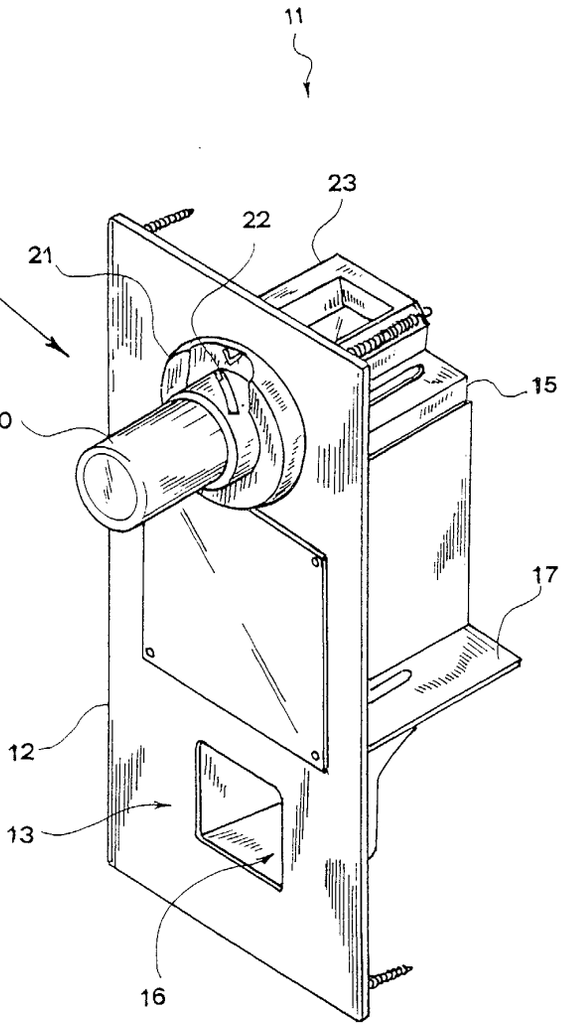

fig 3

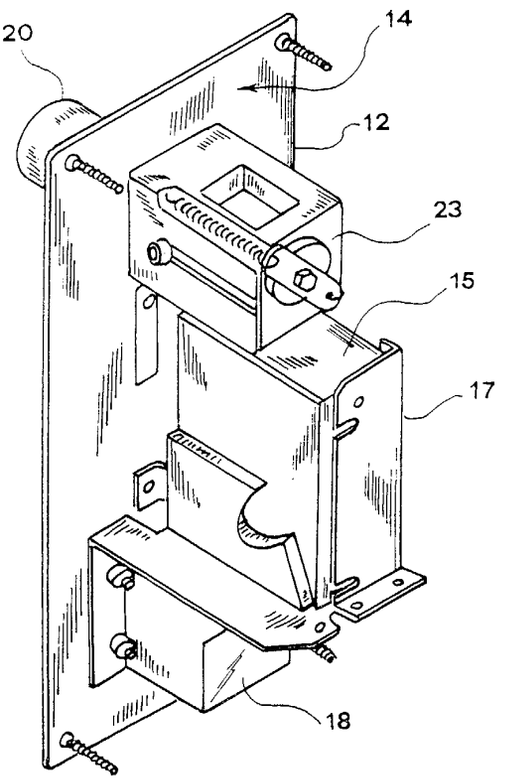

fig 4

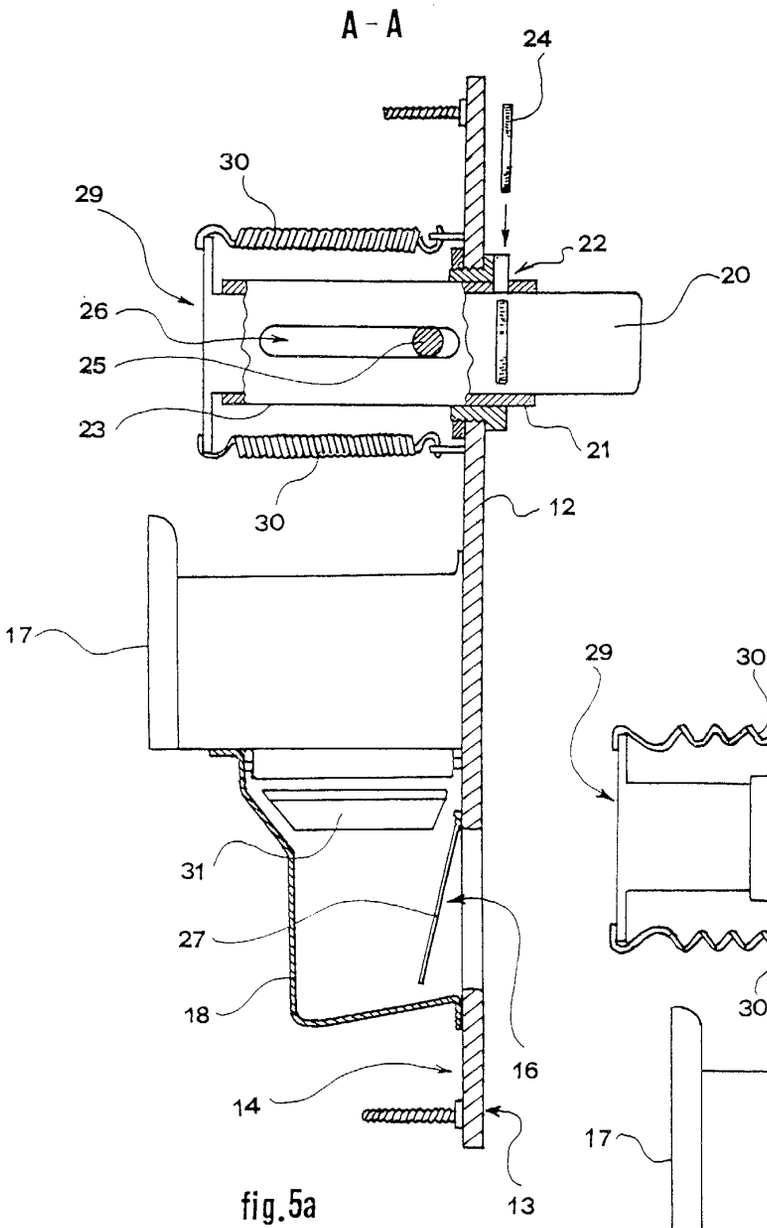
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fig.5a

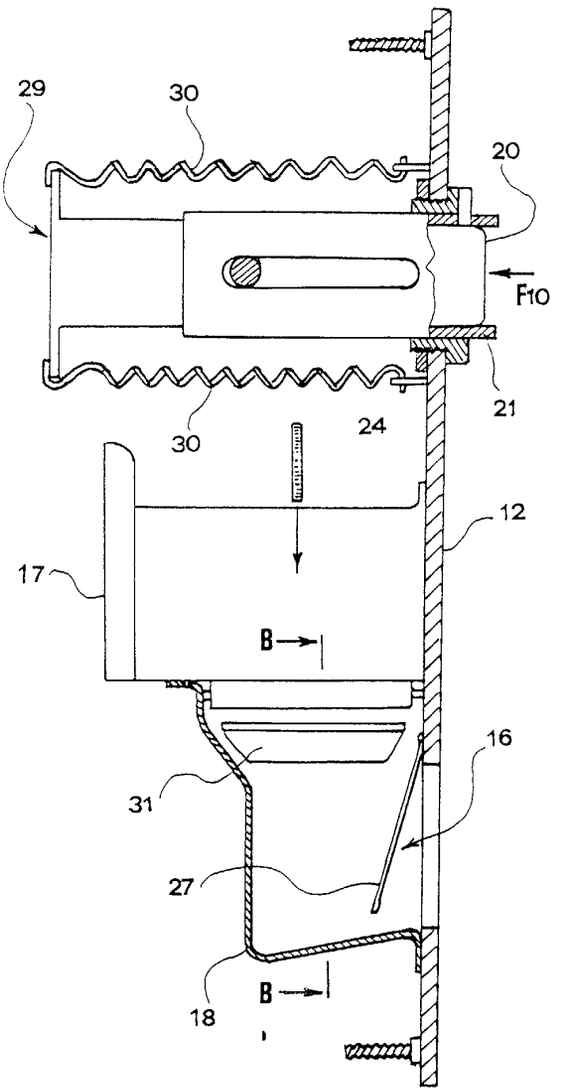
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fig.5b

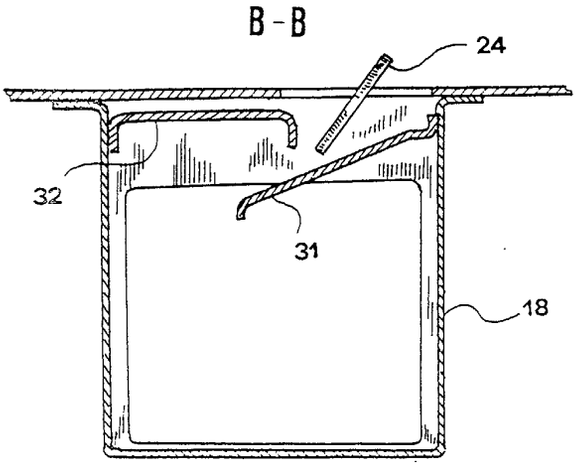

fig.6

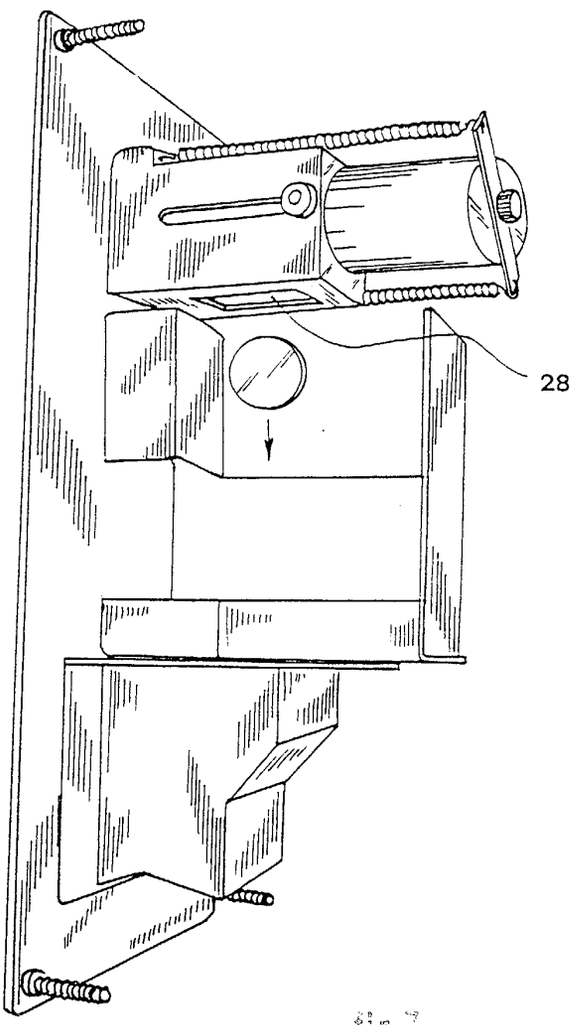

fig.7

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EUROPEAN SEARCH REPORT

Application Number
EP 03 42 5272

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	DE 37 29 098 A (STANDARD ELEKTRIK LORENZ AG) 9 March 1989 (1989-03-09) * the whole document * ---	1-14	G07F1/02 G07F5/02
X A	DE 37 28 306 A (STANDARD ELEKTRIK LORENZ AG) 9 March 1989 (1989-03-09) * the whole document * -----	1-3, 10-14 4	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

G07F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	21 October 2003	Verhoef, P

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